Journal of Fish Diseases

Volume 11

January–November 1988

Contents

Blackwell Scientific Publications

OXFORD LONDON EDINBURGH BOSTON PALO ALTO MELBOURNE

Editors and editorial board

EDITORS

R. J. ROBERTS *Institute of Aquaculture, University of Stirling, Scotland*
R. WOOTTEN *Marine Laboratory, Aberdeen, Scotland*

EDITORIAL BOARD

O. N. BAUER *Leningrad, USSR*
G. R. BELL *Nanaimo, BC, Canada*
N. N. FIJAN *Zagreb, Yugoslavia*
J. L. FRYER *Corvallis, Or, USA*
J. C. HARSHBARGER *Washington DC, USA*
P. M. HINE *Wellington, New Zealand*
G. L. HOFFMAN *W. Va, USA*
P. DE KINKELIN *Paris, France*
O. LJUNGBERG *Stockholm, Sweden*
J. LOM *České Budějovice, Czechoslovakia*
A. L. S. MUNRO *Aberdeen, Scotland*
H. REICHENBACH-KLINKE *Munich, Federal Republic of Germany*
T. SANO *Tokyo, Japan*
S. SARIG *nir-David, Israel*
K. E. WOLF *Kearneysville, W. Va, USA*

Editorial policy. The *Journal of Fish Diseases* is an international journal which publishes scientific papers, short communications, review articles and book reviews. The remit of the journal covers all aspects of disease in wild and cultured fish and shellfish. Research papers are accepted on the basis of their originality and the discussion presented. Every paper is read and criticized by reviewers in whose field the paper lies. Where appropriate, reviewers other than those on the Editorial Board are consulted. However, final responsibility for the selection of papers rests with the Editors.

Editorial correspondence. Papers and other material for publication should be sent to the Editors (see Notice to contributors on back inside cover). Other members of the Editorial Board will be pleased to advise overseas contributors.

Subscription rates. The *Journal of Fish Diseases* is published bimonthly and the subscription price for 1988 is £115.00 (UK), £138.00 (overseas) and $234.50 (USA & Canada) post free. The Journal is delivered to North America by accelerated surface post (asp) and subscribers there can expect to receive their copies within 2 weeks of British publication. Current issues for the Indian sub-continent, Australasia and the Far East are sent by air to regional distribution points, from where they are forwarded to subscribers by surface mail. Any back numbers are normally despatched by surface to all regions, except North America, where they are sent asp, and India, where they are sent by air freight.

Business correspondence. All matters relating to orders and subscriptions, back numbers and offprints should be sent to Blackwell Scientific Publications, P.O. Box 88, Oxford, England.

Advertisement bookings. Enquiries should be sent to the Advertisement Manager, Blackwell Scientific Publications, Osney Mead, Oxford OX2 0EL, England (telephone 0865 240201).

© 1988 Blackwell Scientific Publications Ltd. Authorization to photocopy items for internal or personal use, or the internal or personal use of specific clients, is granted by Blackwell Scientific Publications Ltd for libraries and other users registered with the Copyright Clearance Center (CCC) Transactional Reporting Service, provided that the base fee of $03.00 per copy is paid directly to CCC, 27 Congress Street, Salem, MA 01970, USA. This consent does not extend to other kinds of copying, such as copying for general distribution for advertising or promotional purposes, for creating new collective works or for resale. Special requests should be addressed to the Editors. 0140–7775/88 $03.00.

Origination by PPC Limited, Leatherhead, Surrey
Printed and bound in Great Britain

CONTENTS

NUMBER 1: JANUARY 1988

1 An ultrastructural study of morphological changes in Atlantic salmon, *Salmo salar* L., during the development of coldwater vibriosis
G. K. TOTLAND, A. NYLUND AND K. O. HOLM

15 A new haplosporean infecting the hepatopancreas in the penaeid shrimp, *Penaeus vannamei*
I. DYKOVÁ, J. LOM AND E. FAJER

23 Histological effects of the inert suspended clay kaolin on the gills of juvenile rainbow trout, *Salmo gairdneri* Richardson
S. A. GOLDES, H. W. FERGUSON, R. D. MOCCIA AND P.-Y. DAOUST

35 Introduction and establishment of *Gyrodactylus salaris* Malmberg, 1957, on Atlantic salmon, *Salmo salar* L., fry and parr in the River Vefsna, northern Norway
B. O. JOHNSEN AND A. J. JENSEN

47 Ultrastructural pathology of cutaneous tumours of northern pike, *Esox Lucius* L.
J. S. THOMPSON AND M. MIETTINEN

57 Systematic amoebiasis in cultured European catfish, *Silurus glanis* L.
G. NASH, M. NASH AND H.-J. SCHLOTFELDT

73 Effects of 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) or Aroclor 1254 on the resistance of rainbow trout, *Salmo gairdneri* Richardson, to infectious haematopoietic necrosis virus
J. M. SPITSBERGEN, K. A. SCHAT, J. M. KLEEMAN AND R. E. PETERSON

Short Communications

85 Effects of feeding level on antibody production in African catfish, *Clarias gariepinus* Burchell, after injection of *Yersinia ruckeri* O-antigen
A. M. HENKEN, A. J. TIGCHELAAR AND W. B. VAN MUISWINKEL

89 Hepatocellular adenoma in the slimy sculpin, *Cottus cognatus* Richardson
J. D. FITZSIMONS

93 Outbreaks of an EHNV-like iridovirus in cultured rainbow trout, *Salmo gairdneri* Richardson, in Australia
J. S. LANGDON, J. D. HUMPHREY AND L. M. WILLIAMS

97 Geographic distribution of the myxosporean parasite, *Ceratomyxa shasta* Noble, 1950, in the Columbia River basin, USA
J. L. HOFFMASTER, J. E. SANDERS, J. S. ROHOVEC, J. L. FRYER AND D. G. STEVENS

101 The combined effect of isolated *Aeromonas salmonicida* protease and haemolysin on Atlantic salmon, *Salmo salar* L., compared with that of a total extracellular products preparation
L. FYFE, G. COLEMAN AND A. L. S. MUNRO

NUMBER 2: MARCH 1988

105 A method of experimental infection of kuruma shrimp larvae, *Penaeus japonicus* Bate, with baculoviral mid-gut gland necrosis (BMN) virus
K. MOMOYAMA AND T. SANO

113 Pathological changes in the tiger prawn, *Penaeus monodon* Fabricius, associated with culture in brackishwater ponds developed from potentially acid sulphate soils
G. NASH, I. G. ANDERSON AND M. SHARIFF

125 Studies on the carrier state of infectious pancreatic necrosis virus infections in rainbow trout, *Salmo gairdneri* Richardson
H. MANGUNWIRYO AND C. AGIUS

133 Evaluation of profiles of *Aeromonas salmonicida* as epidemiological markers of furunculosis infections in fish
L. BAST, J. G. DALY, S. A. DEGRANDIS AND R. M. W. STEVENSON

147 The humoral immune response of rainbow trout, *Salmo gairdneri* Richardson, and rabbits to *Aeromonas salmonicida* extracellular products
T. S. HASTINGS AND A. E. ELLIS

161 New coccidians from freshwater fishes of Australia
K. MOLNÁR AND K. RHODE

171 Cell-mediated protection in carp, *Cyprinus carpio* L., against *Aeromonas hydrophila*
T. BABA, J. IMAMURA, K. IZAWA AND K. IKEDA

Short Communications

179 Isolation of a picorna-like virus from smelt, *Osmerus mordax* (Mitchill)
A. R. MOORE, M. F. LI AND M. McMENEMY

185 The production of mouse anti-*Myxosoma cerebralis* antiserum from Percoll®-purified spores and its use in immunofluorescent labelling of Historesin®-embedded cartilage derived from infected rainbow trout, *Salmo gairdneri* Richardson
A. J. HAMILTON AND E. U. CANNING

191 Investigations into pseudobranch lesions of haddock, *Melanogrammus aeglefinus* (L.), caught in Scottish waters
D. W. BRUNO AND A. H. McVICAR

NUMBER 3: MAY 1988

197 Isolation and characterization of a surface layer antigen from *Vibrio salmonicida*
K. HJELMELAND, K. STENSVÅG, T. JØRGENSEN AND S. ESPELID

207 Monoclonal antibodies against *Vibrio salmonicida*: the causative agent of coldwater vibriosis ('Hitra disease') in Atlantic salmon, *Salmo salar* L.
S. ESPELID, K. O. HOLM, K. HJELMELAND AND T. JØRGENSEN

215 Emaciation of pond-cultured snakehead, *Channa striatus* (Fowler)
G. NASH, R. J. ROBERTS, SUPRANEE CHINABUT, SOPA AREERAT AND C. LIMSUWAN

225 Enzyme-linked immunosorbent assay (ELISA) detection of infectious pancreatic necrosis virus (IPNV) in culture fluids and tissue homogenates of the rainbow trout, *Salmo gairdneri* Richardson
L. RODÁK, Z. POPÍŠIL, J. TOMÁNEK, T. VESELÝ, T. OBR AND L. VALÍČEK

237 Immune protection in carp, *Cyprinus carpio* L., after immunization with *Aeromonas hydrophila* crude lipopolysaccharide
T. BABA, J. IMAMURA, K. IZAWA AND K. IKEDA

245 Gastro-intestinal histopathology of paddlefish, *Polyodon spathula* (Walbaum), infected with larval *Hysterothylacium dollfusi* Schmidt, Leiby & Kritsky, 1974
T. MIYAZAKI, W. A. ROGERS AND K. J. SEMMENS

251 *Pleistophora mirandellae* Vaney & Conte, 1901, a microsporidian parasite in cyprinid fish of rivers in Hérault: taxonomy and histopathology
J. MAURAND, C. LOUBES, C. GASC, J. PELLETIER AND J. BARRAL

259 Rhabdomyosarcoma in the Japanese medaka, *Oryzias latipes* (Temminck & Schlegel) and guppy, *Poecilia reticulata* Peters
W. E. HAWKINS, J. W. FOURNIE, R. M. OVERSTREET AND W. W. WALKER

Short Communications

267 Lymphosarcoma in a wild grayling, *Thymallus thymallus* L.: a case report
R. W. HOFFMAN, TH. FISCHER-SCHERL AND C. PFEIL-PUTZIEN

271 A study of bacterial microcolonies associated with the body surface of *Gyrodactylus colemanensis* Mizelle & Kritsky, 1967 (Monogenea), parasitizing *Salmo gairdneri* Richardson
R. CUSACK, T. RAND AND D. CONE

275 Natural antibacterial compounds on the surface of rainbow trout, *Salmo gairdneri* Richardson
B. AUSTIN AND D. McINTOSH

279 **Book Review**

NUMBER 4: JULY 1988

281 Effects of temperature on chemiluminescence of phagocytes from sea bass, *Dicentrarchus labrax* L.
P. ANGELIDIS, F. BAUDIN-LAURENCIN AND P. YOUINOU

289 Use of a discontinuous Percoll gradient technique for the separation of channel catfish, *Ictalurus punctatus* (Rafinesque), peripheral blood leucocytes
P. R. WATERSTRAT, A. J. AINSWORTH AND G. CAPLEY

295 Infection of tilapia, *Oreochromis mossambicus* (Trewavas), by a marine monogenean, *Neobenedenia melleni* (MacCallum, 1927) Yamaguti, 1963 in Kaneohe Bay, Hawaii, USA, and its treatment
J. J. KANEKO II, R. YAMADA, J. A. BROCK AND R. M. NAKAMURA

301 Infection of *Cherax quadricarinatus* (Decapoda: Parastacidae) by the microsporidium *Thelohania* sp. (Microsporida: Nosematidae)
B. W. HERBERT

309 Lack of relationship between virulence of *Aeromonas salmonicida* and the putative virulence factors: A-layer, extracellular proteases and extracellular haemolysins
A. E. ELLIS, A. S. BURROWS AND K. J. STAPLETON

325 Further studies on *Zschokkella russelli* Tripathi (Myxozoa: Myxosporea) from *Ciliata mustela* L. (Teleostei: Gadidae), with emphasis on ultrastructural pathology and sporogenesis
A. J. DAVIES AND I. K. SIENKOWSKI

337 Vaccine-induced protective immunity against *Aeromonas salmonicida* tested in experimental carp erythrodermatitis
D. EVENBERG. P. DE GRAFF, B. LUGTENBERG AND W. B. VAN MUISWINKEL

351 Histopathology, electron microscopy and isolation of channel catfish virus in experimentally infected European catfish, *Silurus glanis* L.
B. CHUMNONGSITATHUM, J. A. PLUMB AND V. HILGE

Short Communications

359 Lesions in the pancreas and liver of an oyster toadfish, *Opsanus tau* (L.), collected from the lower York River, Virginia, USA
A. THIYAGARAJAH AND M. E. BENDER

365 Blood parameters of catfish, *Heteropneustes fossilis* (Bloch), parasitized by metacercariae of *Diplostomulum* sp.
A. MURAD AND S. MUSTAFA

NUMBER 5: SEPTEMBER 1988

371 *Ichthyophthirius multifiliis*: standardization of the infection-response model in *Ameca splendens* (Miller & Fitzsimons)
G. M. CLAYTON AND D. J. PRICE

379 Ultrastructural observations of the life cycle stages of *Ameson atlanticum* sp. nov., a microsporidan parasitizing *Cancer pagurus* L.
C. P. VIVARÈS AND C. AZEVEDO

389 A novel assay to detect macrophage bactericidal activity in fish: factors influencing the killing of *Aeromonas salmonicida*
S. GRAHAM (*nee* CHUNG), A. H. JEFFRIES AND C. J. SECOMBES

397 Lesions associated with natural and experimental infections of *Aeromonas hydrophila* in channel catfish, *Ictalurus punctatus* (Rafinesque)
M. T. VENTURA AND J. M. GRIZZLE

409 Scanning electron microscopy study of the causes of mortality in *Oreochromis mossambicus* (Peters) eggs under artificial incubation
R. P. SUBASINGHE AND C. SOMMERVILLE

417 Haematological and biochemical analyses of Atlantic salmon, *Salmo salar* L., suffering from coldwater vibriosis ('Hitra disease')
R. WAAGBØ, K. SANDNES, S. ESPELID AND Ø. LIE

425 *Cryptobia salmositica*: an *in vitro* and *in vivo* study on the mechanism of anaemia in infected rainbow trout, *Salmo gairdneri* Richardson
P. T. THOMAS AND P. T. K. WOO

Short Communications

433 *Thelohania contejeani* Henneguy parasitizing the noble crayfish, *Astacus astacus* L., in Norway
J. SKURDAL, T. TAUGBØL, E. FJELD, D. O. HESSEN AND T. HÅSTEIN

437 A renal mycosis of an adult hybrid red tilapia, *Oreochromis mossambicus* × *O. hornorum*, caused by the imperfect fungus, *Paecilomyces marquandii*
D. LIGHTNER, R. M. REDMAN, L. MOHNEY, J. SINSKI AND D. PRIEST

441 Serological comparison of golden shiner virus, chum salmon virus, reovirus 13P2 and catfish reovirus
Y. J. BRADY AND J. A. PLUMB

445 Exocrine pancreatic adenomas in the greater redhorse, *Moxostoma valenciennesi* Jordan, and in the European flounder, *Platichthys flesus* (L.)
J. W. FOURNIE, J. J. BLACK AND A. D. VETHAAK

449 Isolation of an IPN-like virus belonging to the serogroup II of the aquatic birnaviruses from dab, *Limanda limanda* L.
N. J. OLESEN, P. E. VESTERGÅRD JØRGENSEN, B. BLOCH AND S. MELLERGAARD

NUMBER 6: NOVEMBER 1988

453 Ultrastructural observations on the causative agent of epitheliocystis in the brown bullhead, *Ictalurus nebulosus* Lesueur, from Ontario and a comparison with the Chlamydiae of higher vertebrates
S. DESSER, W. PATERSON AND D. STEINHAGEN

461 The susceptibility of salmonid fish to an atypical strain of *Aeromonas salmonicida* that infects goldfish, *Carassius auratus* (L.), in Australia
R. J. WHITTINGTON AND B. CULLIS

471 Virulence of the aetiological agent of goldfish ulcer disease in Atlantic salmon, *Salmo salar* L.
J. CARSON AND J. HANDLINGER

481 Viral haemorrhagic septicaemia (VHS) in grayling, *Thymallus thymallus* L.
W. MEIER AND T. WAHLI

489 Presporogonic development of *Sphaerospora renicola* Dykova & Lom, 1982 in the swimbladder of the common carp, *Cyprinus carpio* L.
K. MOLNÁR

499 An assessment of the antigenic homogeneity of *Edwardsiella ictaluri* using monoclonal antibody
J. A. PLUMB AND P. KLESIUS

511 The pathology caused by *Pomphorhynchus laevis* Müller in the alimentary tract of the stone loach, *Noemacheilus barbatulus* (L.)
S. T. WANSTALL, J. S. THOMAS AND P. W. J. ROBOTHAM

Short Communications

525 A sequence homologous to the mammalian p53 oncogene in fish cell lines
C. A. D. SMITH, M. J. LOUIS AND F. M. HETRICK

531 A Reo-like virus observed in the tiger prawn, *Penaeus monodon* Fabricius, from Malaysia
M. NASH, G. NASH, I. G. ANDERSON AND M. SHARIFF

537 **Author Index**

541 **Subject Index**